Claims:

1. A method of enhancing the capability of a host plant to detoxify superoxide by over producing MnSOD and cultivating a whole generation of transgenic plants that confer environmental stress tolerance
2. A method as in claim 1 wherein the superoxide dismutase is capable of transportation to a plant cell organelle.
3. A method as in claim 2 wherein the plant cell organelle is a chloroplast
4. A method as in claims 2 and 3 wherein the MnSOD gene is targeted to the chloroplast.
5. A method as in claim 1 wherein the expression vector is pGV2 used for the transformation
6. A method as in claim 1 wherein the promoter used is the CvMV promoter.
7. A method as in claim 1 wherein the terminator used is the NOS terminator
8. A method as in claim 1 wherein the plasmid constructed was the pGV2
9. A method as in claim 5 wherein the transformant was produced by transforming the vector into *Japonica* rice variety TP309 using the particle accelerator Biolistic PDS-1000/He
10. A method whereby the regeneration of the transformed tissue comprises of the process of inducing adventitious shoots from the embryonic calli obtained from the seeds.
11. A claim as in claim 10 wherein the rooting was done from the adventitious shoots.
12. A claim as in claim 11 wherein the rooted plantlet was acclimatized to the soil.
13. A claim as in claim 1 wherein the transgenic plants could apply to all rice varieties
14. A claim as in claim 1 wherein the transgenic plants could apply to all varieties of plants.
15. A claim as in claim 1 wherein the transgenic plant confer increased tolerance to environmental stress conditions such as drought, salinity, ultra violet radiation, heat and cold.
16. A claim as in claim 15 wherein the transgenic plants confer increased yield under environmental stress conditions
17. A claim as in claim 1 wherein the transgenic plants will play an important role in the food industry by increasing the shelf life.
18. A claim as in claim 16 wherein the transgenic plants will maintain the organoleptic properties of foods
19. A claim as in claims 16 and 17 wherein the transgenic plants will retain the vitamin contents in the food.

[received by the International Bureau on 30 August 2003 (30.08.03);
original claims 1-19 replaced by amended claims 1-16 (2 pages)]

Claims:

1. A method of conferring increased tolerance to environmental stress conditions in cereal plants by overexpressing MnSOD gene.

2. A method of conferring increased tolerance to environmental stress conditions in all the rice varieties by overexpressing MnSOD gene.

3. A claim as in claims 1 & 2, wherein, the rice plant over producing MnSOD enzyme, has superior superoxide detoxification capability.

4. A method of conferring increased tolerance to environmental stress in the rice plant, by transforming cells of the said plant with DNA sequence encoding MnSOD gene.

5. A method of conferring increased tolerance to environmental stress in the rice plant, by transforming cells of the said plant with second DNA sequence encoding a transit peptide to facilitate the transportation of said MnSOD gene directed to a plant cell organelle.

6. A claim as in claims 4 & 5, wherein, the said plant cell organelle is a chloroplast.

7. A claim as in claim 5, wherein, the said transit peptide is a Pea ribulose-1-5-biphosphate carboxylase gene.

8. A claim as in claims 1 & 4, wherein, the rice plants are transformed using pGV2 as the expression vector.

9. A claim as in claims 1 & 4, wherein, the rice plants are transformed using CvMV as the promoter.

10. A claim as in claims 1 & 4, wherein, the terminator used is the NOS terminator.

11. A claim as in claims 1 & 4, wherein, the transgenic plants confer increased tolerance to environmental stress conditions such as drought, salinity, ultra violet radiation, heat and cold.

12. A claim as in claims 1 & 4, wherein, the transgenic plants confer increased yield under environmental stress conditions.

13. A claim as in claims 1 & 4, wherein, the transgenic plants confer increased tolerance to pathogen attack.

14. A claim as in claims 1 & 4, wherein, the transgenic plants will play an important role in the food industry by increasing the shelf life.

15. A claim as in claims 1 & 4, wherein the transgenic plants will maintain the organoleptic properties of foods

16. A claim as in claims 1 & 4, wherein the transgenic plants will retain the vitamin contents in the food.